

CLAIMS

1 1. In a system having a transmitter transmitting a plurality of packets each
2 containing a header to a receiver, a method of synchronizing the transmission of
3 compressed headers between the transmitter and receiver comprising:

4 transmitting a current packet from the transmitter to the receiver
5 containing information that the transmitter is prepared to send subsequently
6 transmitted packets in which the headers therein are to be compressed in
7 comparison to the header contained in the current packet; and

8 transmitting from the receiver to the transmitter an acknowledgment
9 packet that the receiver has received the current packet.

1 2. A method in accordance with claim 1 wherein:

2 the transmitter stores the header of the current packet which has
3 been acknowledged as being received by the receiver as a reference header which
4 is used in the transmission of the subsequently transmitted packets as a reference
5 header to be used by the receiver to decompress the subsequent headers;

6 the receiver stores the header of the current packet, which is
7 acknowledged, for decompressing the compressed headers of the subsequently
8 transmitted packets;

9 the transmitter transmits the subsequent packets using the stored
10 header of the current packet as a reference header; and

11 the receiver uses the stored referenced header to decompress the
12 compressed headers of the subsequently transmitted received packets to produce a
13 full header which is not compressed.

1 3. A method in accordance with claim 1 wherein:

2 the header of the current packet is a full header; and

3 the compressed header of the subsequently transmitted packets is a
4 first order compressed header.

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1 packets in which the headers therein are to be compressed in comparison to the
2 current packet and the receiver transmits an acknowledgment packet that the
3 receiver has received the current packet.

1 10. A system in accordance with claim 9 wherein:

2 the transmitter stores the header of the current packet, which has
3 been acknowledged as being received by the receiver, as a reference header that is
4 used in the transmission of the subsequently transmitted packets as a reference
5 header to be used by the receiver to decompress the subsequent headers;

6 the receiver stores the header of the current packet which is
7 acknowledged as a reference header for decompressing the compressed headers
8 of the subsequently transmitted packets;

9 the transmitter transmits the subsequent packets using the stored
10 header of the current packet as a reference header; and

11 the receiver uses the stored reference header to decompress the
12 compressed headers of the subsequently transmitted received packets to produce a
13 full header which is not compressed.

1 11. A system in accordance with claim 9 wherein:

2 the header of the current packet is a full header; and

3 the compressed header of the subsequently transmitted packets is a
4 first order compressed header.

1 12. A system in accordance with claim 10 wherein:

2 the header of the current packet is a full header; and

3 the compressed header of the subsequently transmitted packets is a
4 first order compressed header.

1 13. A system in accordance with claim 9 wherein:

2 the header of the current packet is a first order compressed header;
3 and

4 the compressed header of the subsequently transmitted packets is a
5 second order compressed header.

1 14. A system in accordance with claim 10 wherein:
2 the header of the current packet is a first order compressed header;
3 and
4 the compressed header of the subsequently transmitted packets is a
5 second order compressed header.

1 15. A system in accordance with claim 9 wherein:
2 the header of the current packet is a full header; and
3 the compressed header of the subsequently transmitted packets is a
4 second order compressed header.

1 16. A system in accordance with claim 10 wherein:
2 the header of the current packet is a full header; and
3 the compressed header of the subsequently transmitted packets is a
4 second order compressed header.

1 17. In a system having a transmitter transmitting a plurality of packets each
2 containing a header to a receiver, a method of decompressing a compressed
3 header contained in a packet currently received by the receiver comprising:
4 determining with a counter at the receiver elapsed time Δt between
5 consecutively received packets;
6 comparing the elapsed time Δt between the currently received packet
7 and an immediately previously received packet to determine if the elapsed time Δt is
8 at least equal to a time lapse indicating that at least one packet is missing between
9 the currently received packet and the immediately previously received packet;
10 processing the elapsed time Δt indicating that at least one packet is
11 missing to determine a number of missing packets between the immediately
12 previously received packet and the currently received packet;
13 adding the number of missing packets to a packet number of the
14 immediately previously received packet to update a number of the current packet in
15 a sequence of transmission the plurality of packets; and
16 decompressing the compressed header of the current packet using
17 the updated number of the current packet.

- 13 number between in the current and immediately previously received packets and
 14 $\text{DIFF}(n_2, n_1) = n_2 - n_1$ when $n_2 > n_1$ and $\text{DIFF}(n_2, n_1) = n_2 + 2^k - n_1$ when $n_2 \leq n_1$.

1 24. A system in accordance with claim 22 wherein:
 2 a number of packets missing between the immediately previously
 3 received packet and the currently received packet is calculated as
 4 $i \cdot \text{SEQ_CYCLE} + \text{DIFF}(n_2, n_1)$
 5 if $(\text{DIFF}(n_2, n_1) + i \cdot \text{SEQ_CYCLE}) \cdot$
 6 $(t \text{ time units}) \leq \Delta t < (\text{DIFF}(n_2, n_1) +$
 7 $(i+1) \cdot \text{SEQ_CYCLE} \cdot (t \text{ time units}))$
 8 wherein i is a whole number equal to or greater than zero, n_2 is a sequence number
 9 in a sequence of transmission of the packets including the current packet, n_1 is a
 10 sequence number in the sequence of transmission of the packets including the
 11 immediately previously received packet, SEQ_CYCLE is equal to 2^k wherein k is the
 12 number of bits of the sequence number, $\text{DIFF}(n_2, n_1)$ is the difference in packet
 13 number between in the current and immediately previously received packets and
 14 $\text{DIFF}(n_2, n_1) = n_2 - n_1$ when $n_2 > n_1$ and $\text{DIFF}(n_2, n_1) = n_2 + 2^k - n_1$ when $n_2 \leq n_1$.

1 ~~25.~~ In a system having a transmitter transmitting a plurality of packets each
 2 containing a header to a receiver, a method of synchronizing transmission of first
 3 order compressed headers between the transmitter and receiver comprising:
 4 transmitting a current packet to the receiver containing a first order
 5 compression header with a number of the current packet in the plurality of packets
 6 being coded by an extended sequence number having ℓ bits;
 7 in response to reception of the current packet containing the first
 8 order header, transmitting from the receiver to the transmitter an acknowledgment
 9 packet that the receiver has received the current packet containing the first order
 10 compressed header; and
 11 in response to reception of the acknowledgment packet, the
 12 transmitter transmits subsequent packets each containing a sequence number
 13 having non-extended sequence number having K bits with $\ell > k$.

27. A method in accordance with claim 25 wherein:

2 the receiver detects at least one lost packet in the subsequently
3 transmitted packets by comparison of the sequence numbers of successively
4 received transmitted packets.

28. A method in accordance with claim 26 wherein:

the receiver detects at least one lost packet in the subsequently transmitted packets by comparison of the sequence numbers of successively received transmitted packets.

29. A method in accordance with claim 26 wherein:

2 a number of missing packets is determined between an immediately
3 previously received packet and the current packet;
4 the number of determined missing packets is added to a packet
5 number of the immediately previously received packet to a number of the current
6 packet to update a number of the current packet in a sequence of transmission of
7 the plurality of packets; and

8 decompressing a sequence number of the current packet using the
9 updated number and decompressing additional fields of information using the stored
10 reference header.

1 30. A method in accordance with claim 28 wherein:

2 a number of missing packets is determined between an immediately
3 previously received packet and the current packet;

4 the number of determined missing packets is added to a packet
5 number of the immediately previously received packet to a number of the current
6 packet to update a number of the current packet in a sequence of transmission of
7 the plurality of packets; and

8 decompressing a sequence number of the current packet using the
9 updated number and decompressing additional fields of information using the stored
10 reference header.

1 31. In a system having a transmitter transmitting a plurality of packets each
2 containing a header to a receiver, a method of synchronizing transmission of first
3 order compressed headers between the transmitter and receiver comprising:

4 transmitting a plurality of packets to the receiver each containing a
5 first order compressed header with a number of each of the plurality of packets in
6 an order of transmission being defined by a sequence number having ℓ extended
7 bits; and

8 detecting at least one lost packet in the transmitted plurality of
9 packets between a current packet and a last packet when a difference DIFF equals
10 DIFF (CD_SN_CURR, CD_SN_LAST) wherein CD_SN_LAST is an absolute packet
11 number of a last received packet and CD_SN_CURR is an absolute packet number
12 of the current packet.

1 32. A method in accordance with claim 31 wherein:

2 a number of lost packets N_{loss} is calculated to be equal to DIFF
3 EXT(CD_SN_CURR, CD_SN_LAST) is equal to (CD_SN_CURR)-(CD_SN_LAST).

1 33. A system comprising:

2 a transmitter which transmits a plurality of packets each containing a
3 header; and

4 a receiver which receives the plurality of packets each containing a
5 header; and wherein

6 a current packet is transmitted by the transmitter to the receiver
7 containing a first order compression header with a number of the plurality of packets
8 being coded by a multiple bit sequence number, in response to reception of the
9 current packet containing the first order header the receiver transmits to the
10 transmitter an acknowledgment packet that the receiver has received the current
11 packet containing the first order compressed header and the transmitter in response
12 to reception of the acknowledgment packet transmits subsequent packets each
13 containing a sequence number in the plurality of packets having a reduced number
14 of bits compared to a number of bits in the sequence number of the current packet.

1 34. A system in accordance with claim 33 wherein:

2 the transmitter stores the header of the current packet, which has
3 been acknowledged as being received by the receiver, as a reference header that is
4 used in the transmission of the subsequently transmitted packets containing a first
5 order compressed header as a reference header to be used by the receiver to
6 decompress the subsequent headers;

7 the receiver stores the header of the current packet, which is
8 acknowledged as a reference header, for decompressing the compressed headers
9 of the subsequently transmitted packets containing a first order compressed header;

10 the transmitter transmits subsequent packets containing the first
11 order compressed header using the stored header of the current packet as a
12 reference header; and

13 the receiver decompresses the compressed headers of the
14 subsequently transmitted received packets containing the first order compressed
15 header with the stored reference header to produce a full header which is not
16 compressed.

8 the receiver decompresses a sequence number of the current packet
9 using the updated number and additional fields of information using the stored
10 reference header.

39. In a system having a transmitter transmitting a plurality of packets each containing a header to a receiver, a method of synchronizing the transmission of headers between the transmitter and receiver comprising:

transmitting from the receiver to the transmitter periodic acknowledgments which are individually transmitted to the transmitter with a spacing such that the transmitter receives an acknowledgment at least once every N packets where $N=2^k$ and k is a number of bits used to number the packets in sequence; and

in an absence of the transmitter receiving a properly timed acknowledgment from the receiver, the receiver increases the number of bits defining the sequence number to be ℓ extended bits wherein ℓ extended is larger than k.

1 40. A method in accordance with claim 39 wherein:
2 the receiver can detect a maximum number of lost packets equal
3 2^l extended bits.

41. A method in accordance with claim 39 wherein:
the transmitter, in response to a subsequently received
acknowledgment, reduces the number of bits in the sequence numbers from
 ℓ extended bits to k bits.

42. A method in accordance with claim 40 wherein:
the transmitter, in response to a subsequently received
acknowledgment, reduces the number of bits in the sequence numbers from
 ℓ extended bits to k bits.

1 ~~43.~~ In a system having a transmitter which transmits a plurality of packets to
2 a receiver, each of the packets containing a header, a method of maintaining
3 sequence synchronization during transmission of packets having compressed
4 headers between the transmitter and the receiver comprising:
5 initiating transmission of packets having compressed headers by
6 transmitting from the transmitter to the receiver a packet having a full header;
7 transmitting from the transmitter to the receiver, subsequent to
8 transmission of the packet having the full header, packets having compressed
9 headers, each compressed header containing information related to the full header
10 of the packet having a full header; and
11 periodically transmitting from the receiver to the transmitter an
12 acknowledgment packet indicating that the packets having the compressed headers
13 have been received.

1 44. A method according to claim 43, wherein the transmitting comprises:
2 sequentially adding to the compressed header of each of the packets
3 having compressed headers a sequence number which is incremented by one for
4 each sequential packet of the packets having compressed headers, the sequence
5 number has a predetermined number of bits.

1 45. A method according to claim 44, further comprising:
2 when the receiver has not received the acknowledgment packet,
3 extending the number of bits of the sequence number beyond the predetermined
4 number of bits.

1 ~~46.~~ A method of reducing a number of bits contained in headers of a
2 sequence of transmitted data packets comprising:
3 transmitting at least one sequence of data packets from a transmitter
4 to a receiver with each sequence containing at least one packet containing a full
5 header followed by at least one packet containing a compressed header having
6 fewer bits than the full header;
7 in response to one of the data packets received by the receiver
8 containing a full header transmitting from the receiver to the transmitter an

9 acknowledgment that the receiver has received the one data packet containing the
10 full header; and
11 in response to the receiving of the acknowledgment by the
12 transmitter, transmitting at least one subsequent data packet from the transmitter to
13 the receiver with a header which is further compressed beyond the compression of
14 the at least one header in the at least one sequence.

1 47. A method in accordance with claim 46 wherein:
2 the compressed headers of the at least one sequence are first order
3 compressed headers; and
4 the compressed header of the at least one subsequent packet is a
5 second order compressed header.

1 48. A method in accordance with claim 46 wherein:
2 a plurality of sequences of packets are transmitted.

1 49. A method in accordance with claim 47 wherein:
2 a plurality of sequences of packets are transmitted.

1 50. A method in accordance with claim 46 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing a full header.

1 51. A method in accordance with claim 47 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing a full header.

1 52. A method in accordance with claim 48 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing a full header.

1 53. A method in accordance with claim 49 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing a full header.

1 54. A method in accordance with claim 46 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 55. A method in accordance with claim 54 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

1 56. A method in accordance with claim 47 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 57. A method in accordance with claim 56 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

1 58. A method in accordance with claim 48 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 59. A method in accordance with claim 58 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

1 60. A method in accordance with claim 49 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 74. A method in accordance with claim 70 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing the first header.

1 75. A method in accordance with claim 71 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing the first header.

1 76. A method in accordance with claim 72 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing the first header.

1 77. A method in accordance with claim 73 wherein:
2 the receiver generates the acknowledgment in response to a first
3 received packet containing the first header.

1 78. A method in accordance with claim 70 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 79. A method in accordance with claim 78 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

1 80. A method in accordance with claim 71 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 81. A method in accordance with claim 80 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

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1 89. A method in accordance with claim 88 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

1 90. A method in accordance with claim 76 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 91. A method in accordance with claim 90 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

1 92. A method in accordance with claim 77 wherein:
2 the receiver transmits at least one additional acknowledgment to the
3 transmitter in response to reception of the at least one packet containing a
4 compressed header.

1 93. A method in accordance with claim 92 wherein:
2 the at least one additional acknowledgment is generated in response
3 to a first packet in the at least one sequence.

1 94. A method of reducing a number of bits contained in headers of a
2 sequence of transmitted packets comprising:
3 transmitting at least one sequence of packets from a transmitter to a
4 receiver with each sequence containing at least one packet containing a full header
5 followed by at least one packet containing a compressed header having fewer bits
6 than the full header; and
7 in response to one of the packets received by the receiver containing
8 a full header transmitting from the receiver to the transmitter an acknowledgment
9 that the receiver has received the one packet containing the full header.

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1 95. A method of reducing a number of bits contained in headers of a
2 sequence of transmitted packets comprising:
3 transmitting at least one sequence of packets from a transmitter to a
4 receiver with each sequence containing at least one packet containing a first header
5 followed by at least one packet containing a second header which is compressed by
6 having fewer bits than the first header; and
7 in response to one of the packets received by the receiver containing
8 the first header transmitting from the receiver to the transmitter an acknowledgment
9 that the receiver has received the one packet containing the first header.

1 96. A method of transmitting packets within a string of packets having
2 compressed headers each containing a sequence number identifying a position of
3 each packet in the string from a transmitter to a receiver comprising:
4 processing the string to detect when the string contains at least one
5 lost or out of sequence packet prior to transmission of the packet;
6 transmitting the string with compressed headers from the transmitter
7 to the receiver as a sequence of packets containing packets preceding and
8 succeeding the lost or out of sequence packets; and
9 transmitting with at least one packet succeeding the at least one lost
10 or out of sequence packet a number of any lost or out of sequence packets in the
11 data string of packets.

1 97. A method in accordance with claim 96 wherein:
2 the receiver decompresses at least one succeeding packet which is
3 received including adding the number of any lost or out of sequence packets to the
4 sequence number of each received succeeding packet.

1 98. A method in accordance with claim 97 wherein:
2 the decompressing by the receiver uses a stored reference packet
3 which was transmitted as part of the string of packets before the at least one lost or
4 out of sequence packet and includes a sequence number used to decompress the
5 at least one subsequent packet.

1 107. A method in accordance with claim 106 wherein:
2 the decompressing by the receiver uses a stored reference packet
3 which was transmitted as part of the string of packets before the at least one
4 sequence and includes a sequence number used to decompress the at least one
5 subsequent packet.

1 108. A method of transmitting packets within a data string of packets having
2 compressed headers each containing a sequence number identifying a position of
3 each packet in the string from a transmitter to a receiver comprising:
4 processing the string to detect when the string contains at least one
5 lost or out of sequence packet prior to transmission of the packet;
6 transmitting the string with compressed headers from the transmitter
7 to the receiver as a sequence of packets containing packets preceding and
8 succeeding the lost or out of sequence packets; and
9 transmitting with at least one packet succeeding the at least one out
10 of sequence packet a number of any out of sequence packets in the data string.

1 109. A method in accordance with claim 108 wherein:
2 the receiver decompresses at least one succeeding packet which is
3 received including adding the number of any out of sequence packets to the
4 sequence number of each received succeeding packet.

1 110. A method in accordance with claim 109 wherein:
2 the decompressing by the receiver uses a stored reference packet
3 which was transmitted as part of the string of packets before the at least one
4 sequence and includes a sequence number used to decompress the at least one
5 subsequent packet.

1 111. A method of transmitting a string of packets comprising:
2 processing the string of packets with an error detection process to
3 identify any packets in the string of packets which contain errors;
4 removing the packets from the string which contain the detected
5 errors; and
6 transmitting from a transmitter to a receiver the string without the
7 packets which have been removed.

1 112. A method in accordance with claim 111 wherein:
2 the error detection process utilizes an error detection code within
3 each packet to identify any packets in the string of packets which contain errors.

1 113. A method in accordance with claim 112 wherein:
2 the error detection process processes data in each packet to
3 compute an error detection code and determines if a stored error detection code in
4 each packet matches the computed error detection code and if a match is not found
5 removes the packet from the string and which is removed.

1 114. A method in accordance with claim 111 wherein:
2 headers of at least some of the packets are compressed prior to
3 transmission.

1 115. A method in accordance with claim 114 wherein:
2 the compression of headers of at least some of the packets occurs
3 after the removal of packets containing errors.

1 116. A method in accordance with claim 112 wherein:
2 headers of at least some of the packets are compressed prior to
3 transmission.

1 117. A method in accordance with claim 116 wherein:
2 the compression of headers of at least some of the packets occurs
3 after the removal of packets containing errors.

1 130. A method in accordance with claim 129 wherein:
2 the decompressing of the header of at least one received packet
3 succeeding the at least one packet not present in the received packets is performed
4 by adding a product of the number and an extrapolation function to the header of a
5 received packet which preceded the at least one received packet not present in the
6 received packets.

1 131. A method in accordance with claim 129 wherein:
2 a plurality of transmitted packets are not present in the received
3 packets.

1 132. A method in accordance with claim 130 wherein:
2 a plurality of transmitted packets are not present in the received
3 packets.

1 133. A method in accordance with claim 129 wherein:
2 at least one compressed header in the at least one received packet
3 succeeding the at least one packet which is not present in the received packets is
4 decompressed by adding a plurality of products of the number and different
5 extrapolation functions to the at least one compressed header in the at least one
6 packet succeeding the at least one packet which is not present in the received
7 packets.

1 134. A method in accordance with claim 130 wherein:
2 at least one compressed header in the at least one received packet
3 succeeding the at least one packet which is not present in the received packets is
4 decompressed by adding a plurality of products of the number and different
5 extrapolation functions to the at least one compressed header in the at least one
6 packet succeeding the at least one packet which is not present in the received
7 packets.

1 135. A method in accordance with claim 131 wherein:
 2 at least one compressed header in the at least one received packet
 3 succeeding the at least one packet which is not present in the received packets is
 4 decompressed by adding a plurality of products of the number and different
 5 extrapolation functions to the at least one compressed header in the at least one
 6 packet succeeding the at least one packet which is not present in the received
 7 packets.

1 136. A method in accordance with claim 132 wherein:
 2 at least one compressed header in the at least one received packet
 3 succeeding the at least one packet which is not present in the received packets is
 4 decompressed by adding a plurality of products of the number and different
 5 extrapolation functions to the at least one compressed header in the at least one
 6 packet succeeding the at least one packet which is not present in the received
 7 packets.

1 137. A method in accordance with claim 130 wherein:
 2 the extrapolation function varies linearly from packet to packet in a
 3 plurality of packets succeeding the at least one packet which is not present in the
 4 received packets.

1 138. A method in accordance with claim 131 wherein:
 2 the extrapolation function varies non-linearly within a plurality of
 3 packets succeeding the at least one packet which is not present in the received
 4 packets.

1 139. A method in accordance with claim 131 wherein:
 2 the extrapolation function varies linearly from packet to packet in a
 3 plurality of packets succeeding the at least one packet which is not present in the
 4 received packets.

1 153. A method in accordance with claim 136 wherein:
2 the extrapolation functions are a time stamp and a representation of
3 the sequence number of the at least one received packet succeeding the at least
4 one packet which is not present in the received packets.

1 154. A method in accordance with claim 137 wherein:
2 the extrapolation functions are a time stamp and a representation of
3 the sequence number of the at least one received packet succeeding the at least
4 one packet which is not present in the received packets.

1 155. A method in accordance with claim 129 wherein:
2 the compressed headers are second order compressed headers.

1 156. A method in accordance with claim 130 wherein:
2 the compressed headers are second order compressed headers.

1 157. A method in accordance with claim 133 wherein:
2 the compressed headers are second order compressed headers.

1 158. A method in accordance with claim 134 wherein:
2 the compressed headers are second order compressed headers.

1 159. A method of regenerating headers of compressed packets within a
2 string of packets which individually contain a sequence number identifying a position
3 of each transmitted packet in the string of packets comprising:
4 transmitting the string of packets from a transmitter to a receiver with
5 at least one received packet in a sequence within the transmitted string being
6 received with an erroneous compressed header;
7 storing the at least one received packet in at least one sequence
8 having a header which is erroneous;
9 determining a number of packets in each stored sequence; and
10 when a number of stored packets in at least one sequence matches
11 a number determined by processing the sequence numbers of the packets
12 preceding and succeeding the at least one sequence, regenerating the compressed

13 headers of at least one stored sequence by adding a function of an extrapolation
14 function to a header of at least one packet of at least one sequence.

1 160. A method in accordance with claim 159 wherein:
2 the function of an extrapolation function which is added to a header
3 of a plurality of packets of the at least one sequence increases linearly between
4 sequential packets in the at least one sequence.

5 161. A method in accordance with claim 159 wherein:
6 the function of an extrapolation function which is added to a header
7 of a plurality of packets of the at least one sequence increases non-linearly within
8 the packets in the at least one sequence.

1 162. A method in accordance with claim 159 wherein:
2 a function of a plurality of different extrapolation functions is added to
3 a header of at least one packet of at least one sequence.

1 163. A method in accordance with claim 162 wherein:
2 the function of the plurality of different extrapolation functions which
3 is added to a header of a plurality of packets of at least one sequence increases
4 linearly between sequential packets in the at least one sequence.

1 164. A method in accordance with claim 162 wherein:
2 the function of the plurality of different extrapolation functions which
3 are added to a header of a plurality of packets of at least one sequence increases
4 non-linearly within packets in the at least one sequence.

1 165. A method in accordance with claim 159 wherein:
2 the number of packets in each stored sequence is determined from a
3 difference between the sequence number of the packets immediately preceding and
4 immediately succeeding the at least one sequence.

1 174. A method in accordance with claim 160 wherein:
2 the extrapolation function is at least one of a sequence number or an
3 IP ID of the at least one received packet.

1 175. A method in accordance with claim 161 wherein:
2 the extrapolation function is a time stamp.

1 176. A method in accordance with claim 161 wherein:
2 the extrapolation function is at least one of a sequence number or an
3 IP ID of the at least one received packet.

1 177. A method in accordance with claim 162 wherein:
2 ‧ the extrapolation functions are at least one of a time stamp, an IP ID,
3 or a sequence number.

1 178. A method in accordance with claim 163 wherein:
2 the extrapolation functions are at least one of a time stamp, an IP ID,
3 or a sequence number.

1 179. A method in accordance with claim 164 wherein:
2 the extrapolation functions are at least one of a time stamp, an IP ID,
3 or a sequence number.

1 180. A method in accordance with claim 166 wherein:
2 the extrapolation function is a time stamp.

1 181. A method in accordance with claim 166 wherein:
2 the extrapolation function is at least one of a sequence number or an
3 IP ID of the at least one received packet.

1 182. A method in accordance with claim 167 wherein:
2 the extrapolation function is a time stamp.

1 183. A method in accordance with claim 167 wherein:
2 the extrapolation function is at least one of a sequence number or an
3 IP ID of the at least one received packet.

1 184. A method in accordance with claim 168 wherein:
2 the extrapolation functions are a timestamp and a sequence number.

1 185. A method in accordance with claim 169 wherein:
2 the extrapolation functions are at least one of a time stamp, an IP ID,
3 or a sequence number.

1 186. A method in accordance with claim 170 wherein:
2 the extrapolation functions are at least one of a time stamp, an IP ID,
3 or a sequence number.

1 ~~187~~. A method of transmitting headers from a compressor to a
2 decompressor comprising:
3 transmitting at least one packet from a compressor to a
4 decompressor;
5 in response to receiving the at least one packet at the decompressor
6 transmitting at least one feedback to the compressor signalling that the
7 decompressor has received the at least one packet; and
8 in response to the feedback, the compressor transmits at least one
9 additional packet to the decompressor which has a smaller number of bits in a
10 header of the at least one additional packet than a number of bits of a header in the
11 at least one packet.

1 188. A method in accordance with claim 187 wherein:
2 each header of the at least one packet is a full header; and
3 each header of the at least one additional packet is a first order
4 header.

1 189. A method in accordance with claim 187 wherein:
2 each header of the at least one packet is a first order header; and
3 each header of the at least one additional packet is a second order
4 header.

5 190. A method in accordance with claim 187 wherein:
6 the feedback is an acknowledgment packet.

1 191. A method of transmitting headers from a compressor to a
2 decompressor comprising:
3 transmitting a plurality of packets from a compressor to a
4 decompressor;
5 in response to receiving the at least one packet at the decompressor,
6 transmitting at least one feedback to the compressor signalling that the
7 decompressor has received at least one of the plurality of packets; and
8 transmitting at least one additional packet from the compressor to the
9 decompressor which has a smaller number of bits in a header of the at least one
10 additional packet than a number of bits of a header in the at least one packet when
11 whichever first occurs of
12 (1) a transmission of a predetermined number of packets of the at least one
13 packet, or
14 (2) reception of the at least one feedback.

1 192. A method in accordance with claim 191 wherein:
2 each header of the at least one packet is a full header; and
3 each header of the at least one additional packet is a first order
4 header.

1 193. A method in accordance with claim 191 wherein:
2 each header of the at least one packet is a first order header; and
3 each header of the at least one additional packet is a second order
4 header.

1 194. A method in accordance with claim 191 wherein:
2 the feedback is an acknowledgment packet.

1 195. A method of transmitting headers from a compressor to a
2 decompressor comprising:
3 transmitting a plurality of packets from a compressor to a
4 decompressor; and
5 transmitting at least one additional packet from the compressor to the
6 decompressor which has a smaller number of bits in a header of the at least one
7 additional packet than a number of bits of a header in the at least one packet when
8 a transmission of a predetermined number of packets of the at least one packet has
9 occurred.

1 196. A method in accordance with claim 195 wherein:
2 the predetermined number of packets is based upon a selection
3 criteria.

4 197. A method in accordance with claim 196 wherein:
5 the selection criteria are based upon channel conditions involving
6 transmissions to the decompressor from the compressor or transmissions from the
7 decompressor to compressor.

1 198. A method in accordance with claim 191 wherein:
2 the predetermined number of packets is based upon a selection
3 criteria.

1 199. A method in accordance with claim 198 wherein:
2 the selection criteria are based upon channel conditions involving
3 transmissions to the decompressor from the compressor or transmissions from the
4 decompressor to compressor.

200. In a system having a transmitter which transmits a plurality of packets to a receiver, each of the packets containing a header, a method of maintaining sequence synchronization during transmission of packets having compressed headers between the transmitter and the receiver comprising:

- initiating transmission of packets having headers by transmitting from the transmitter to the receiver a packet having a header;
- transmitting from the transmitter to the receiver, subsequent to transmission of the packet having the header, packets having compressed headers, each compressed header containing information related to the header of the packet;
- and
- nonperiodically transmitting from the receiver to the transmitter an acknowledgment packet indicating that the packets having the compressed headers have been received.